CLAIM LISTING

The claims are not being amended in connection with this response, but Applicants include a "clean" listing to assist in review of the remarks herein:

1. (Withdrawn) A method of forming a polymeric coating on a support surface, the method comprising:

a) providing a support surface;

b) providing a nonpolymeric grafting reagent comprising at least one photoinitator group;

c) providing at least one polymerizable monomer solution adapted to be contacted with the surface, in the presence of the grafting reagent, and to be polymerized upon activation of the photoinitiator; and

d) applying the grafting reagent and monomer solution to the surface in a manner, and under conditions, suitable to coat the surface with the grafting reagent and to cause the polymerization of monomers to the surface upon activation of the grafting reagent.

2. (Withdrawn) A method according to claim 1 wherein the support surface comprises a porous support surface.

3. (Withdrawn) A method according to claim 1 wherein the reagent further comprises one or more latent reactive groups adapted to be activated in order to covalently attach the grafting reagent to the surface itself, upon activation of the latent reactive group(s).

4. (Withdrawn) A method according to claim 1 wherein the method is used to form a polymeric coating on the surface of less than about 100 nanometers in thickness.

5. (Withdrawn) A method according to claim 1 wherein the support surface comprises a material selected from the group consisting of polyolefins, polystyrenes, poly(alkyl)methacrylates and poly(alkyl) acrylates, polyacrylonitriles, poly(vinylacetates), poly(vinyl alcohols), chlorine-containing polymers such as poly(vinyl) chloride, polyoxymethylenes, polycarbonates, polyamides, polyimides, polyurethanes, polyvinylidene difluoride (PVDF), phenolics, amino-epoxy resins, polyesters, silicones, polyethylene terephthalates (PET), polyglycolic acids (PGA), poly-(p-phenyleneterephthalamides), polyphosphazenes, polypropylenes, parylenes, silanes, and silicone elastomers, as well as copolymers and combinations thereof.

6. (Withdrawn) A method according to claim 5 wherein the surface is provided by the surface of a device selected from medical devices for use within or upon the body and biomedical devices.

7. (Withdrawn) A method according to claim 6 wherein the medical devices are selected from long-term devices selected from the group consisting of grafts, stents, stent/graft combinations, valves, heart assist devices, shunts, and anastomoses devices; catheters ; orthopedic devices selected from the group consisting of joint implants, fracture repair devices, and artificial tendons; dental devices selected from the group consisting of dental implants and dental fracture repair devices; intraocular lenses; surgical devices selected from the group consisting of sutures and patches; synthetic prostheses; and artificial organs selected from the group consisting of artificial lung, kidney, and heart devices and short-term devices selected from the group consisting of vascular devices; catheters selected from the group consisting of acute and chronic hemodialysis catheters, cooling/heating catheters, and percutaneous transluminal coronary angioplasty (PTCA)

catheters; and ophthalmic devices selected from the group consisting of contact lenses and glaucoma drain shunts.

8. (Withdrawn) A method according to claim 6 wherein the biomedical devices are selected from diagnostic slides selected from the group consisting of gene chips, DNA chip arrays, microarrays, protein chips, and fluorescence *in situ* hybridization (FISH) slides; arrays, selected from the group consisting of cDNA arrays and oligonucleotide arrays; blood sampling and testing components; functionalized microspheres; tubing and membranes; blood bags, membranes, cell culture devices, chromatographic support materials, and biosensors.

9. (Withdrawn) A method according to claim 3 wherein the surface is provided with the polymeric coating prior to, during and/or following fabrication of the device itself and the photoinitiator and latent reactive groups are activated simultaneously to polymerize the monomers and attach the reagent to the surface.

10. (Withdrawn) A method according to claim 1 wherein the grafting reagent is selected from:

a) tetrakis (4-benzoylbenzyl ether), the tetrakis (4-benzoylbenzoate ester) of pentaerythritol, and an acylated derivative of tetraphenylmethane,

b) 4,5-bis(4-benzoylphenylmethyleneoxy) benzene-1,3-disulfonic acid dipotassium salt (DBDS), 2,5-bis(4-benzoylphenylmethyleneoxy) benzene-1,4-disulfonic acid dipotassium salt (DBHQ), and 2,5-bis(4-benzoylphenylmethyleneoxy) benzene-1-sulfonic acid mono (or di-) sodium salt; and

c) ethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat); hexamethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat);

1,4-bis(4-benzoylbenzyl)-1,4-dimethylpiperazinediium dibromide (Diphoto-Diquat); bis(4-benzoylbenzyl)hexamethylenetetraminediium dibromide (Diphoto-Diquat): bis[2-(4-benzoylbenzyldimethylammonio)ethyl]-4-benzoylbenzylmethylammonium tribromide (Triphoto-Triquat): 4,4-bis(4-benzoylbenzyl)morpholinium bromide (Diphoto-Monoquat); ethylenebis[(2-(4-benzoylbenzyldimethylammonio)ethyl)-4-benzoylbenzylmethylammonium] tetrabromide (Tetraphoto-Tetraquat); 1,1,4,4-tetrakis(4-benzoylbenzyl)piperazinediium Dibromide (Tetraphoto-Diquat); and N,N-bis[2-(4-benzoylbenzyloxy)ethyl]-2-aminoethanesulfonic acid, sodium salt (Diphoto-Monosulfonate), and analogues thereof.

11. (Withdrawn) A method according to claim 1 wherein the polymerizable monomer is selected from:

a) neutral hydrophilic monomers selected from acrylamide, methacrylamide, N-alkylacrylamides, N-vinylpyrrolidinone, N-vinylacetamide, N-vinyl formamide, hydroxyethylacrylate, hydroxyethylmethacrylate, hydroxypropyl acrylate or methacrylate, glycerolmonomethacrylate, and glycerolmonoacrylate;

b) negatively charged hydrophilic functional monomers selected from acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, AMPS (acrylamidomethylpropane sulfonic acid), vinyl phosphoric acid, vinylbenzoic acid; and

c) positively charged monomers selected from 3-aminopropylmethacrylamide (APMA), methacrylamidopropyltrimethylammonium chloride (MAPTAC), N,N-dimethylaminoethylmethacrylate, N,N-diethylaminoethylacrylate,

and combinations thereof.

12. (Withdrawn) A method according to claim 1 wherein the polymerizable monomer comprises a macromeric polymerizable molecule selected from poly(ethylene

glycol)monomethyacrylate, methoxypoly(ethylene glycol)monomethacrylate, poly(ethylene glycol)monoacrylate, methyacrylamidopoly(acrylamide), poly(acrylamide-co-3-methacrylamidopropylacrylamide), poly(vinylalcohol)methacrylate, poly(vinylalcohol)acrylate, and poly(vinylalcohol)dimethacrylate.

13. (Withdrawn) A method according to claim 1 wherein the polymeric coating provides an improved combination of properties selected from permeability, antithrombogenicity, lubricity, hemocompatibility, wettability/hydrophilicity, durability of attachment to the surface, biocompatibility, and reduced bacterial adhesion, as compared to a comparable polymeric coating formed by the attachment of preformed polymers.

14. (Withdrawn) A method according to claim 3 wherein the photoinitiator(s) and latent reactive group(s) are activated simultaneously to polymerize the monomers and attach the reagent to the surface.

15. (Withdrawn) A method of forming a polymeric coating on a support surface, the method comprising:

a) providing a porous support surface;

b) providing a nonpolymeric grafting reagent comprising at least one photoinitator group, and further comprising one or more latent reactive groups adapted to be activated in order to covalently attach the grafting reagent to the surface itself;

c) providing at least one polymerizable monomer solution adapted to be contacted with the surface, in the presence of the grafting reagent, and to be polymerized upon activation of the photoinitiator; and

d) applying the grafting reagent and monomer solution to the surface in a manner, and under conditions, suitable to coat the surface with the grafting reagent and to cause the

polymerization of monomers to the surface upon activation of the grafting reagent and the covalent attachment of the reagent to the surface.

16. (Withdrawn) A method according to claim 15 wherein the photoinitiator(s) and latent reactive group(s) are activated simultaneously to polymerize the monomers and attach the reagent to the surface, to provide a polymeric coating on the surface of less than about 100 nanometers in thickness.

17. (Withdrawn) A method according to claim 15 wherein the support surface comprises a material selected from the group consisting of polyolefins, polystyrenes, poly(alkyl)methacrylates and poly(alkyl) acrylates, polyacrylonitriles, poly(vinylacetates), poly(vinyl alcohols), chlorine-containing polymers such as poly(vinyl) chloride, polyoxymethylenes, polycarbonates, polyamides, polyimides, polyurethanes, polyvinylidene difluoride (PVDF), phenolics, amino-epoxy resins, polyesters, silicones, polyethylene terephthalates (PET), polyglycolic acids (PGA), poly-(p-phenyleneterephthalamides), polyphosphazenes, polypropylenes, parylenes, silanes, and silicone elastomers, as well as copolymers and combinations thereof, and

the grafting reagent is selected from:

a) tetrakis (4-benzoylbenzyl ether), the tetrakis (4-benzoylbenzoate ester) of pentaerythritol, and an acylated derivative of tetraphenylmethane,

b) 4,5-bis(4-benzoylphenylmethyleneoxy) benzene-1,3-disulfonic acid dipotassium salt (DBDS), 2,5-bis(4-benzoylphenylmethyleneoxy) benzene-1,4-disulfonic acid dipotassium salt (DBHQ), and 2,5-bis(4-benzoylphenylmethyleneoxy) benzene-1-sulfonic acid mono (or di-) sodium salt; and

c) ethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat); hexamethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat); 1,4-bis(4-benzoylbenzyl)-1,4-dimethylpiperazinediium dibromide (Diphoto-Diquat); bis(4-benzoylbenzyl)hexamethylenetetraminediium dibromide (Diphoto-Diquat): bis[2-(4-benzoylbenzyldimethylammonio)ethyl]-4-benzoylbenzylmethylammonium tribromide (Triphoto-Triquat): 4,4-bis(4-benzoylbenzyl)morpholinium bromide (Diphoto-Monoquat); ethylenebis[(2-(4-benzoylbenzyldimethylammonio)ethyl)-4-benzoylbenzylmethylammonium] tetrabromide (Tetraphoto-Tetraquat); 1,1,4,4-tetrakis(4-benzoylbenzyl)piperazinediium Dibromide (Tetraphoto-Diquat); and N,N-bis[2-(4-benzoylbenzyloxy)ethyl]-2-aminoethanesulfonic acid, sodium salt (Diphoto-Monosulfonate), and analogues thereof.

18. (Withdrawn) A method according to claim 17 wherein the surface is provided by the surface of a device selected from medical devices for use within or upon the body and biomedical devices.

19. (Withdrawn) A method according to claim 18 wherein

a) the medical devices are selected from long-term devices selected from the group consisting of grafts, stents, stent/graft combinations, valves, heart assist devices, shunts, and anastomoses devices; catheters ; orthopedic devices selected from the group consisting of joint implants, fracture repair devices, and artificial tendons; dental devices selected from the group consisting of dental implants and dental fracture repair devices; intraocular lenses; surgical devices selected from the group consisting of sutures and patches; synthetic prostheses; and artificial organs selected from the group consisting of artificial lung, kidney, and heart devices and short-term devices selected from the group consisting of vascular devices; catheters selected from the group consisting of acute and chronic hemodialysis catheters, cooling/heating catheters, and percutaneous

transluminal coronary angioplasty (PTCA) catheters; and ophthalmic devices selected from the group consisting of contact lenses and glaucoma drain shunts; and

b) the biomedical devices are selected from diagnostic slides selected from the group consisting of gene chips, DNA chip arrays, microarrays, protein chips, and fluorescence *in situ* hybridization (FISH) slides; arrays, selected from the group consisting of cDNA arrays and oligonucleotide arrays; blood sampling and testing components; functionalized microspheres; tubing and membranes; blood bags, membranes, cell culture devices, chromatographic support materials, and biosensors.

20. (Withdrawn) A method according to claim 17 wherein the polymerizable monomer is selected from:

a) neutral hydrophilic structural monomers selected from acrylamide, methacrylamide, N-alkylacrylamides, N-vinylpyrrolidinone, N-vinylacetamide, N-vinyl formamide, hydroxyethylacrylate, hydroxyethylmethacrylate, hydroxypropyl acrylate or methacrylate, glycerolmonomethacrylate, and glycerolmonoacrylate;

b) negatively charged hydrophilic functional monomers selected from acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, AMPS (acrylamidomethylpropane sulfonic acid), vinyl phosphoric acid, vinylbenzoic acid; and

c) positively charged monomers selected from 3-aminopropylmethacrylamide (APMA), methacrylamidopropyltrimethylammonium chloride (MAPTAC), N,N-dimethylaminoethylmethacrylate, N,N-diethylaminoethylacrylate,
and combinations thereof.

21. (Withdrawn) A support surface bearing a polymeric coating prepared according to a method comprising the steps of:

a) providing a support surface;

b) providing a nonpolymeric grafting reagent comprising at least two photoinitator groups, the grafting agent having one or more substituents comprising positively charged groups;

c) providing at least one polymerizable monomer solution adapted to be contacted with the surface, in the presence of the grafting reagent, and to be polymerized upon activation of the photoinitiator; and

d) applying the grafting reagent and monomer solution to the surface in a manner, and under conditions, suitable to coat the surface with the grafting reagent and to cause the polymerization of monomers to the surface upon activation of the grafting reagent.

22. (Previously presented) A porous support surface bearing a polymeric coating prepared according to a method comprising the steps of:

a) providing a support surface;

b) providing a nonpolymeric grafting reagent comprising at least two photoinitator groups, the grafting agent having one or more substituents comprising positively charged groups;

c) providing at least one polymerizable monomer solution adapted to be contacted with the surface, in the presence of the grafting reagent, and to be polymerized upon activation of the photoinitiator; and

d) applying the grafting reagent and monomer solution to the surface in a manner, and under conditions, suitable to coat the surface with the grafting reagent and to cause the polymerization of monomers to the surface upon activation of the grafting reagent

wherein the coating is covalently attached to the surface by the residues of one or more photoinitiator groups provided by the grafting reagent.

23. (Withdrawn) A surface according to claim 21 wherein the polymeric coating is less than about 100 nanometers in thickness.

24. (Withdrawn) A surface according to claim 21 wherein the surface is provided by a material selected from the group consisting of polyolefins, polystyrenes, poly(alkyl)methacrylates and poly(alkyl) acrylates, polyacrylonitriles, poly(vinylacetates), poly(vinyl alcohols), chlorine-containing polymers such as poly(vinyl) chloride, polyoxymethylenes, polycarbonates, polyamides, polyimides, polyurethanes, polyvinylidene difluoride (PVDF), phenolics, amino-epoxy resins, polyesters, silicones, polyethylene terephthalates (PET), polyglycolic acids (PGA), poly-(p-phenyleneterephthalamides), polyphosphazenes, polypropylenes, parylenes, silanes, and silicone elastomers, as well as copolymers and combinations thereof.

25. (Withdrawn) A surface according to claim 24 wherein the surface is provided by a medical device selected from long-term devices selected from the group consisting of grafts, stents, stent/graft combinations, valves, heart assist devices, shunts, and anastomoses devices; catheters ; orthopedic devices selected from the group consisting of joint implants, fracture repair devices, and artificial tendons; dental devices selected from the group consisting of dental implants and dental fracture repair devices; intraocular lenses; surgical devices selected from the group consisting of sutures and patches; synthetic prostheses; and artificial organs selected from the group consisting of artificial lung, kidney, and heart devices; and short-term devices selected from the group consisting of vascular devices; catheters selected from the group consisting of acute and chronic hemodialysis catheters, cooling/heating catheters, and percutaneous transluminal coronary angioplasty (PTCA) catheters; and ophthalmic devices selected from the group consisting of contact lenses and glaucoma drain shunts.

26. (Withdrawn) A surface according to claim 21 wherein the grafting reagent is selected from:

ethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat); hexamethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat); 1,4-bis(4-benzoylbenzyl)-1,4-dimethylpiperazinediium dibromide (Diphoto-Diquat); bis(4-benzoylbenzyl)hexamethylenetetraminediium dibromide (Diphoto-Diquat): bis[2-(4-benzoylbenzyldimethylammonio)ethyl]-4-benzoylbenzylmethylammonium tribromide (Triphoto-Triquat): 4,4-bis(4-benzoylbenzyl)morpholinium bromide (Diphoto-Monoquat); ethylenebis[(2-(4-benzoylbenzyldimethylammonio)ethyl)-4-benzoylbenzylmethylammonium] tetrabromide (Tetraphoto-Tetraquat); and 1,1,4,4-tetrakis(4-benzoylbenzyl)piperazinediium Dibromide (Tetraphoto-Diquat), and analogues thereof.

27. (Withdrawn) A surface according to claim 21 wherein the polymer is formed by the polymerization of polymerizable monomers selected from:

a) neutral hydrophilic structural monomers selected from acrylamide, methacrylamide, N-alkylacrylamides, N-vinylpyrrolidinone, N-vinylacetamide, N-vinyl formamide, hydroxyethylacrylate, hydroxyethylmethacrylate, hydroxypropyl acrylate or methacrylate, glycerolmonomethacrylate, and glycerolmonoacrylate;

b) negatively charged hydrophilic functional monomers selected from acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, AMPS (acrylamidomethylpropane sulfonic acid), vinyl phosphoric acid, vinylbenzoic acid;

c) positively charged monomers selected from 3-aminopropylmethacrylamide (APMA), methacrylamidopropyltrimethylammonium chloride (MAPTAC), N,N-dimethylaminoethylmethacrylate, N,N-diethylaminoethylacrylate; and

d) macromeric polymerizable molecule selected from poly(ethylene glycol)monomethyacrylate, methoxypoly(ethylene glycol)monomethacrylate, poly(ethylene glycol)monoacrylate, methyacrylamidopoly(acrylamide), poly(acrylamide-co-3-methacrylamidopropylacrylamide), poly(vinylalcohol)methacrylate, poly(vinylalcohol)acrylate, poly(vinylalcohol)dimethacrylate,

and combinations thereof,

28. (Withdrawn) A surface according to claim 21 wherein the polymeric coating provides an improved combination of properties selected from permeability, antithrombogenicity, lubricity, hemocompatibility, wettability/hydrophilicity, durability of attachment to the surface, biocompatibility, and reduced bacterial adhesion, as compared to a surface bearing a comparable polymeric coating formed by the attachment of preformed polymers.

29. (Previously presented) A porous support surface bearing a polymeric coating prepared according to a method of forming a polymeric coating on a support surface, the method comprising:

a) providing a porous support surface;

b) providing a nonpolymeric grafting reagent comprising at least two photoinitator groups, at least one of which is adapted to be activated in order to covalently attach the grafting reagent to the surface itself, and further comprising one or more constituents comprising positively charged groups;

c) providing at least one polymerizable monomer solution adapted to be contacted with the surface, in the presence of the grafting reagent, and to be polymerized upon activation of the grafting reagent; and

d) applying the grafting reagent and monomer solution to the surface in a manner, and under conditions, suitable to coat the surface with the grafting reagent and to cause the polymerization of monomers to the surface upon activation of the grafting reagent and the covalent attachment of the reagent to the surface.

30. (Previously presented) A porous surface according to claim 29 wherein the support surface comprises a material selected from the group consisting of polyolefins, polystyrenes, poly(alkyl)methacrylates and poly(alkyl) acrylates, polyacrylonitriles, poly(vinylacetates), poly(vinyl alcohols), chlorine-containing polymers such as poly(vinyl) chloride, polyoxymethylenes, polycarbonates, polyamides, polyimides, polyurethanes, polyvinylidene difluoride (PVDF), phenolics, amino-epoxy resins, polyesters, silicones, polyethylene terephthalates (PET), polyglycolic acids (PGA), poly-(p-phenyleneterephthalamides), polyphosphazenes, polypropylenes, parylenes, silanes, and silicone elastomers, as well as copolymers and combinations thereof, and

the grafting reagent is selected from:

ethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat); hexamethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat); 1,4-bis(4-benzoylbenzyl)-1,4-dimethylpiperazinediium dibromide (Diphoto-Diquat); bis(4-benzoylbenzyl)hexamethylenetetraminediium dibromide (Diphoto-Diquat): bis[2-(4-benzoylbenzyldimethylammonio)ethyl]-4-benzoylbenzylmethylammonium tribromide (Triphoto-Triquat): 4,4-bis(4-benzoylbenzyl)morpholinium bromide (Diphoto-Monoquat); ethylenebis[(2-(4-benzoylbenzyldimethylammonio)ethyl)-4-benzoylbenzylmethylammonium] tetrabromide (Tetraphoto-Tetraquat); and 1,1,4,4-tetrakis(4-benzoylbenzyl)piperazinediium Dibromide (Tetraphoto-Diquat) and analogues thereof, and

wherein the polymer is formed by the polymerization of polymerizable monomers selected from:

a) neutral hydrophilic structural monomers selected from acrylamide, methacrylamide, N-alkylacrylamides, N-vinylpyrrolidinone, N-vinylacetamide, N-vinyl formamide, hydroxyethylacrylate, hydroxyethylmethacrylate, hydroxypropyl acrylate or methacrylate, glycerolmonomethacrylate, and glycerolmonoacrylate;

b) negatively charged hydrophilic functional monomers selected from acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, AMPS (acrylamidomethylpropane sulfonic acid), vinyl phosphoric acid, vinylbenzoic acid; and

c) positively charged monomers selected from 3-aminopropylmethacrylamide (APMA), methacrylamidopropyltrimethylammonium chloride (MAPTAC), N,N-dimethylaminoethylmethacrylate, N,N-diethylaminoethylacrylate.

31. (Withdrawn) A grafting system for use in performing the method of claim 3, the system comprising both reagent and polymerizable monomer, in a form adapted to be contacted with a the porous support surface under conditions suitable to permit the reagent to be attached to the surface by the residue of at least one activated latent reactive (e.g., photoreactive) group, and to permit the monomer to be polymerized upon activation of the photoinitiator provided by the reagent.

32. (Withdrawn) A device comprising a surface bearing a polymer coating formed according to the method of claim 1.

33. (Withdrawn) A device according to claim 32 wherein the device comprises a medical device selected from long-term devices selected from the group consisting of grafts, stents, stent/graft combinations, valves, heart assist devices, shunts, and anastomoses devices;

catheters ; orthopedic devices selected from the group consisting of dental implants and dental fracture repair devices; intraocular lenses; surgical devices selected from the group consisting of sutures and patches; synthetic prostheses; and artificial organs selected from the group consisting of artificial lung, kidney, and heart devices and short-term devices selected from the group consisting of vascular devices; catheters selected from the group consisting of acute and chronic hemodialysis catheters, cooling/heating catheters, and percutaneous transluminal coronary angioplasty (PTCA) catheters; and ophthalmic devices selected from the group consisting of contact lenses and glaucoma drain shunts.

34. (Withdrawn) A device according to claim 32 wherein the device comprises a biomedical device selected from diagnostic slides selected from the group consisting of gene chips, DNA chip arrays, microarrays, protein chips, and fluorescence *in situ* hybridization (FISH) slides; arrays, selected from the group consisting of cDNA arrays and oligonucleotide arrays; blood sampling and testing components; functionalized microspheres; tubing and membranes; blood bags, membranes, cell culture devices, chromatographic support materials, and biosensors.

35. (Withdrawn) A device according to claim 33 wherein the device comprises a distal protection device.

36. (Previously presented) A device comprising a surface bearing a polymer coating formed according a method comprising the steps of:

a) providing a support surface;

b) providing a nonpolymeric grafting reagent comprising at least two photoinitator groups, the grafting agent having one or more substituents comprising positively charged groups;

c) providing at least one polymerizable monomer solution adapted to be contacted with the surface, in the presence of the grafting reagent, and to be polymerized upon activation of the photoinitiator; and

d) applying the grafting reagent and monomer solution to the surface in a manner, and under conditions, suitable to coat the surface with the grafting reagent and to cause the polymerization of monomers to the surface upon activation of the grafting reagent, wherein the support surface comprises a porous support surface and the coating is covalently attached to the surface by the residues of one or more latent reactive groups provided by the grafting reagent.

37. (Withdrawn) A device according to claim 32 wherein the polymeric coating is less than about 100 nanometers in thickness.

38. (Withdrawn) A device according to claim 33 wherein the coated surface is provided by a material selected from the group consisting of polyolefins, polystyrenes, poly(alkyl)methacrylates and poly(alkyl) acrylates, polyacrylonitriles, poly(vinylacetates), poly(vinyl alcohols), chlorine-containing polymers such as poly(vinyl) chloride, polyoxymethylenes, polycarbonates, polyamides, polyimides, polyurethanes, polyvinylidene difluoride (PVDF), phenolics, amino-epoxy resins, polyesters, silicones, polyethylene terephthalates (PET), polyglycolic acids, poly-(p-phenyleneterephthalamides), polyphosphazenes, polypropylenes, parylenes, silanes, and silicone elastomers, as well as copolymers and combinations thereof.

39. (Withdrawn) A device according to claim 38 wherein the grafting reagent is selected from:

a) tetrakis (4-benzoylbenzyl ether), the tetrakis (4-benzoylbenzoate ester) of pentaerythritol, and an acylated derivative of tetraphenylmethane,

b) 4,5-bis(4-benzoylphenylmethyleneoxy) benzene-1,3-disulfonic acid dipotassium salt (DBDS), 2,5-bis(4-benzoylphenylmethyleneoxy) benzene-1,4-disulfonic acid dipotassium salt (DBHQ), and 2,5-bis(4-benzoylphenylmethyleneoxy) benzene-1-sulfonic acid mono (or di-) sodium salt; and

c) ethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat); hexamethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat); 1,4-bis(4-benzoylbenzyl)-1,4-dimethylpiperazinediium dibromide (Diphoto-Diquat); bis(4-benzoylbenzyl)hexamethylenetetraminediium dibromide (Diphoto-Diquat): bis[2-(4-benzoylbenzyldimethylammonio)ethyl]-4-benzoylbenzylmethylammonium tribromide (Triphoto-Triquat): 4,4-bis(4-benzoylbenzyl)morpholinium bromide (Diphoto-Monoquat); ethylenebis[(2-(4-benzoylbenzyldimethylammonio)ethyl)-4-benzoylbenzylmethylammonium] tetrabromide (Tetraphoto-Tetraquat); 1,1,4,4-tetrakis(4-benzoylbenzyl)piperazinediium Dibromide (Tetraphoto-Diquat); and N,N-bis[2-(4-benzoylbenzyloxy)ethyl]-2-aminoethanesulfonic acid, sodium salt (Diphoto-Monosulfonate), and analogues thereof.

40. (Withdrawn) A device according to claim 38 wherein the polymeric coating is formed by the polymerization of polymerizable monomers selected from:

a) neutral hydrophilic structural monomers selected from acrylamide, methacrylamide, N-alkylacrylamides, N-vinylpyrrolidinone, N-vinylacetamide, N-vinyl formamide, hydroxyethylacrylate, hydroxyethylmethacrylate, hydroxypropyl acrylate or methacrylate, glycerolmonomethacrylate, and glycerolmonoacrylate;

b) negatively charged hydrophilic functional monomers selected from acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, AMPS (acrylamidomethylpropane sulfonic acid), vinyl phosphoric acid, vinylbenzoic acid;

c) positively charged monomers selected from 3-aminopropylmethacrylamide (APMA), methacrylamidopropyltrimethylammonium chloride (MAPTAC), N,N-dimethylaminoethylmethacrylate, N,N-diethylaminoethylacrylate; and

d) macromeric polymerizable molecule selected from poly(ethylene glycol)monomethyacrylate, methoxypoly(ethylene glycol)monomethacrylate, poly(ethylene glycol)monoacrylate, methyacrylamidopoly(acrylamide), poly(acrylamide-co-3-methacrylamidopropylacrylamide), poly(vinylalcohol)methacrylate, poly(vinylalcohol)acrylate, poly(vinylalcohol)dimethacrylate,

and combinations thereof,

41. (Withdrawn) A device according to claim 40 wherein the polymeric coating provides an improved combination of properties selected from permeability, antithrombogenicity, lubricity, hemocompatibility, wettability/hydrophilicity, durability of attachment to the surface, biocompatibility, and reduced bacterial adhesion, as compared to a surface bearing a comparable polymeric coating formed by the attachment of preformed polymers.

42. (Previously presented) A device comprising a surface bearing a polymer coating, the polymer coating being formed by a method comprising the steps of:

a) providing a porous support surface;

b) providing a nonpolymeric grafting reagent comprising at least two photoinitator groups, at least one of which is adapted to be activated in order to covalently attach the grafting reagent to the surface itself, and further comprising one or more constituents comprising positively charged groups;

c) providing at least one polymerizable monomer solution adapted to be contacted with the surface, in the presence of the grafting reagent, and to be polymerized upon activation of the grafting reagent; and

d) applying the grafting reagent and monomer solution to the surface in a manner, and under conditions, suitable to coat the surface with the grafting reagent and to cause the polymerization of monomers to the surface upon activation of the grafting reagent and the covalent attachment of the reagent to the surface, wherein the support surface comprises a material selected from the group consisting of polyolefins, polystyrenes, poly(alkyl)methacrylates and poly(alkyl) acrylates, polyacrylonitriles, poly(vinylacetates), poly(vinyl alcohols), chlorine-containing polymers such as poly(vinyl) chloride, polyoxymethylenes, polycarbonates, polyamides, polyimides, polyurethanes, polyvinylidene difluoride (PVDF), phenolics, amino-epoxy resins, polyesters, silicones, polyethylene terephthalates (PET), polyglycolic acids (PGA), poly-(p-phenyleneterephthalamides), polyphosphazenes, polypropylenes, parylenes, silanes, and silicone elastomers, as well as copolymers and combinations thereof, and

the grafting reagent is selected from:

ethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat); hexamethylenebis(4-benzoylbenzyldimethylammonium) dibromide (Diphoto-Diquat); 1,4-bis(4-benzoylbenzyl)-1,4-dimethylpiperazinediium dibromide (Diphoto-Diquat); bis(4-benzoylbenzyl)hexamethylenetetraminediium dibromide (Diphoto-Diquat): bis[2-(4-benzoylbenzyldimethylammonio)ethyl]-4-benzoylbenzylmethylammonium tribromide (Triphoto-Triquat): 4,4-bis(4-benzoylbenzyl)morpholinium bromide (Diphoto-Monoquat); ethylenebis[(2-(4-benzoylbenzyldimethylammonio)ethyl)-4-benzoylbenzylmethylammonium]

tetrabromide (Tetraphoto-Tetraquat); and 1,1,4,4-tetrakis(4-benzoylbenzyl)piperazinediium Dibromide (Tetraphoto-Diquat), and analogues thereof, and

wherein the polymer is formed by the polymerization of polymerizable monomers selected from:

a) neutral hydrophilic structural monomers selected from acrylamide, methacrylamide, N-alkylacrylamides, N-vinylpyrrolidinone, N-vinylacetamide, N-vinyl formamide, hydroxyethylacrylate, hydroxyethylmethacrylate, hydroxypropyl acrylate or methacrylate, glycerolmonomethacrylate, and glycerolmonoacrylate;

b) negatively charged hydrophilic functional monomers selected from acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, AMPS (acrylamidomethylpropane sulfonic acid), vinyl phosphoric acid, vinylbenzoic acid; and

c) positively charged monomers selected from 3-aminopropylmethacrylamide (APMA), methacrylamidopropyltrimethylammonium chloride (MAPTAC), N,N-dimethylaminoethylmethacrylate, N,N-diethylaminoethylacrylate,

and combinations thereof.

43. (Previously presented) A device comprising a surface bearing a polymer coating formed according a method comprising the steps of:

a) providing a support surface;

b) providing a nonpolymeric grafting reagent comprising at least two photoinitator groups, the grafting agent having one or more substituents comprising positively charged groups;

c) providing at least one polymerizable monomer solution adapted to be contacted with the surface, in the presence of the grafting reagent, and to be polymerized upon activation of the photoinitiator; and

d) applying the grafting reagent and monomer solution to the surface in a manner, and under conditions, suitable to coat the surface with the grafting reagent and to cause the polymerization of monomers to the surface upon activation of the grafting reagent, wherein the support surface comprises a porous support surface and the coating is covalently attached to the surface.

44. (Cancelled)

45. (Withdrawn) A support surface bearing a polymeric coating prepared according to a method comprising the steps of:

a) providing a support surface;

b) providing a nonpolymeric grafting reagent comprising four photoinitator groups, the grafting agent having a nonpolymeric core molecule with the four photoinitiator groups attached to the core molecule;

c) providing at least one polymerizable monomer adapted to be contacted with the surface, in the presence of the grafting reagent, and to be polymerized upon activation of the photoinitiator; and

d) applying the grafting reagent and monomer solution to the surface in a manner, and under conditions, suitable to coat the surface with the grafting reagent and to cause the polymerization of monomers to the surface upon activation of the grafting reagent.

46. (Previously presented) A support surface bearing a polymeric coating prepared according to a method comprising the steps of:

a) providing a support surface;

b) providing a nonpolymeric grafting reagent comprising four photoinitator groups, the grafting agent having a nonpolymeric core molecule with the four photoinitiator groups attached to the core molecule;

c) providing at least one polymerizable monomer adapted to be contacted with the surface, in the presence of the grafting reagent, and to be polymerized upon activation of the photoinitiator; and

d) applying the grafting reagent and monomer solution to the surface in a manner, and under conditions, suitable to coat the surface with the grafting reagent and to cause the polymerization of monomers to the surface upon activation of the grafting reagent, wherein the support surface comprises a porous support surface and the coating is covalently attached to the surface.

47. (Previously presented) A surface according to claim 46 wherein the coating is covalently attached to the surface by the residues of one or more latent reactive groups provided by the grafting reagent.

48. (Withdrawn) A surface according to claim 45 wherein the polymeric coating is less than about 100 nanometers in thickness.

49. (Withdrawn) A surface according to claim 45 wherein the surface is provided by a material selected from the group consisting of polyolefins, polystyrenes, poly(alkyl)methacrylates and poly(alkyl) acrylates, polyacrylonitriles, poly(vinylacetates), poly(vinyl alcohols), chlorine-containing polymers such as poly(vinyl) chloride, polyoxymethylenes, polycarbonates, polyamides, polyimides, polyurethanes, polyvinylidene difluoride (PVDF), phenolics, amino-epoxy resins, polyesters, silicones, polyethylene terephthalates (PET), polyglycolic acids (PGA), poly-(p-phenyleneterephthalamides),

polyphosphazenes, polypropylenes, parylenes, silanes, and silicone elastomers, as well as copolymers and combinations thereof.

50. (Withdrawn) A surface according to claim 49 wherein the surface is provided by a medical device selected from long-term devices selected from the group consisting of grafts, stents, stent/graft combinations, valves, heart assist devices, shunts, and anastomoses devices; catheters ; orthopedic devices selected from the group consisting of joint implants, fracture repair devices, and artificial tendons; dental devices selected from the group consisting of dental implants and dental fracture repair devices; intraocular lenses; surgical devices selected from the group consisting of sutures and patches; synthetic prostheses; and artificial organs selected from the group consisting of artificial lung, kidney, and heart devices; and short-term devices selected from the group consisting of vascular devices; catheters selected from the group consisting of acute and chronic hemodialysis catheters, cooling/heating catheters, and percutaneous transluminal coronary angioplasty (PTCA) catheters; and ophthalmic devices selected from the group consisting of contact lenses and glaucoma drain shunts.

51. (Withdrawn) A surface according to claim 45 wherein the grafting reagent is selected from a group consisting of tetrakis (4-benzoylbenzyl ether), the tetrakis (4-benzoylbenzoate ester) of pentaerythritol, and an acylated derivative of tetraphenylmethane, and analogues thereof.

52. (Withdrawn) A surface according to claim 45 wherein the polymer is formed by the polymerization of polymerizable monomers selected from:

a) neutral hydrophilic structural monomers selected from acrylamide, methacrylamide, N-alkylacrylamides, N-vinylpyrrolidinone, N-vinylacetamide, N-vinyl

formamide, hydroxyethylacrylate, hydroxyethylmethacrylate, hydroxypropyl acrylate or methacrylate, glycerolmonomethacrylate, and glycerolmonoacrylate;

b) negatively charged hydrophilic functional monomers selected from acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, AMPS (acrylamidomethylpropane sulfonic acid), vinyl phosphoric acid, vinylbenzoic acid;

c) positively charged monomers selected from 3-aminopropylmethacrylamide (APMA), methacrylamidopropyltrimethylammonium chloride (MAPTAC), N,N-dimethylaminoethylmethacrylate, N,N-diethylaminoethylacrylate; and

d) macromeric polymerizable molecule selected from poly(ethylene glycol)monomethyacrylate, methoxypoly(ethylene glycol)monomethacrylate, poly(ethylene glycol)monoacrylate, methyacrylamidopoly(acrylamide), poly(acrylamide-co-3-methacrylamidopropylacrylamide), poly(vinylalcohol)methacrylate, poly(vinylalcohol)acrylate, poly(vinylalcohol)dimethacrylate,

and combinations thereof.

53. (Withdrawn) A surface according to claim 45 wherein the polymeric coating provides an improved combination of properties selected from permeability, antithrombogenicity, lubricity, hemocompatibility, wettability/hydrophilicity, durability of attachment to the surface, biocompatibility, and reduced bacterial adhesion, as compared to a surface bearing a comparable polymeric coating formed by the attachment of preformed polymers.

54. (Previously presented) A porous support surface bearing a polymeric coating prepared according to a method of forming a polymeric coating on a support surface, the method comprising:

a) providing a porous support surface;

b) providing a nonpolymeric grafting reagent comprising at least four photoinitator groups, the grafting agent having a nonpolymeric core molecule with the four photoinitiator groups attached to the core molecule and configured to be activated in order to covalently attach the grafting reagent to the surface itself;

c) providing at least one polymerizable monomer solution adapted to be contacted with the surface, in the presence of the grafting reagent, and to be polymerized upon activation of the photoinitiator; and

d) applying the grafting reagent and monomer solution to the surface in a manner, and under conditions, suitable to coat the surface with the grafting reagent and to cause the polymerization of monomers to the surface upon activation of the grafting reagent and the covalent attachment of the reagent to the surface.

55. (Previously presented) A porous surface according to claim 54 wherein the support surface comprises a material selected from the group consisting of polyolefins, polystyrenes, poly(alkyl)methacrylates and poly(alkyl) acrylates, polyacrylonitriles, poly(vinylacetates), poly(vinyl alcohols), chlorine-containing polymers such as poly(vinyl) chloride, polyoxymethylenes, polycarbonates, polyamides, polyimides, polyurethanes, polyvinylidene difluoride (PVDF), phenolics, amino-epoxy resins, polyesters, silicones, polyethylene terephthalates (PET), polyglycolic acids (PGA), poly-(p-phenyleneterephthalamides), polyphosphazenes, polypropylenes, parylenes, silanes, and silicone elastomers, as well as copolymers and combinations thereof, and

the grafting reagent is selected from:

tetrakis (4-benzoylbenzyl ether), the tetrakis (4-benzoylbenzoate ester) of pentaerythritol, and an acylated derivative of tetraphenylmethane, and

wherein the polymer is formed by the polymerization of polymerizable monomers selected from:

a) neutral hydrophilic structural monomers selected from acrylamide, methacrylamide, N-alkylacrylamides, N-vinylpyrrolidinone, N-vinylacetamide, N-vinyl formamide, hydroxyethylacrylate, hydroxyethylmethacrylate, hydroxypropyl acrylate or methacrylate, glycerolmonomethacrylate, and glycerolmonoacrylate;

b) negatively charged hydrophilic functional monomers selected from acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, AMPS (acrylamidomethylpropane sulfonic acid), vinyl phosphoric acid, vinylbenzoic acid;

c) positively charged monomers selected from 3-aminopropylmethacrylamide (APMA), methacrylamidopropyltrimethylammonium chloride (MAPTAC), N,N-dimethylaminoethylmethacrylate, N,N-diethylaminoethylacrylate; and

d) macromeric polymerizable molecule selected from poly(ethylene glycol)monomethyacrylate, methoxypoly(ethylene glycol)monomethacrylate, poly(ethylene glycol)monoacrylate, methyacrylamidopoly(acrylamide), poly(acrylamide-co-3-methacrylamidopropylacrylamide), poly(vinylalcohol)methacrylate, poly(vinylalcohol)acrylate, poly(vinylalcohol)dimethacrylate,

and combinations thereof.